MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2320
Gaithersburg, Maryland 20899-2320

SRM Number: 2389
MSDS Number: 2389
SRM Name: Amino Acids in 0.1 mol/L Hydrochloric Acid

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Description: Standard Reference Material (SRM) 2389 is intended primarily for the use in calibration of chromatographic instrumentation for the determination of the amino acids. SRM 2389 is a solution of 17 amino acids in a 0.1 mol/L aqueous solution of hydrochloric acid. A unit of SRM 2389 consists of five 2-milliliter ampoules each containing approximately 1.2 mL of the solution.

Substance: Amino Acids in a 0.1 mol/L Hydrochloric Acid

Other Designations: **Amino Acids** (Alanine, Arginine, Aspartic Acid, Cystine, Glutamic Acid, Glycine, Histidine, Isoleucine, Leucine, Lysine, Methionine, Phenylalanine, Proline, Serine, Threonine, Tyrosine, Valine) **in 0.1 mol/L** (0.1 M; 0.1 N)
Hydrochloric Acid (hydrochloric acid; muriatic acid; hydrogen chloride)

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component: **Hydrochloric Acid**

CAS Number: 7647-01-0

EINECS: 231-595-7

SRM Nominal Concentration (mass %): 0.3 % (0.1 mol/L)

EC Classification (assigned): **HCl Concentration Limits: 0.2 % ≤ C < 0.5 %**
C

EC Risk: **HCl Concentration Limits: 0.2 % ≤ C < 0.5 %**
R34

EC Safety: S26, S36, S37, S39

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 2 Fire = 0 Reactivity = 0

Major Health Hazards: No significant target effects reported.

Potential Health Effects

Inhalation: No information is available on the significant effects of short-term or long-term exposure of 0.1 mol/L hydrochloric acid by inhalation. However, effects should be less severe than from exposure to higher concentrations where exposure may cause irritation and burning of the throat, with coughing and choking and occasionally ulceration of the nose, throat, or larynx, bronchitis, pneumonia, and headaches.

Skin Contact: No information is available on the significant effects of skin exposure of 0.1 mol/L hydrochloric acid. However, effects should be less severe than from exposure to higher concentrations where exposure may cause severe irritation, inflammation, ulceration, and chemical burns. Prolonged contact with vapors of dilute solutions may cause dermatitis.

Eye Contact: No information is available on the significant effects of eye contact of 0.1 mol/L hydrochloric acid. However, eye contact may cause severe irritation, conjunctivitis, corneal necrosis, and burns. Effects are dependent upon the concentration and duration of exposure.

Ingestion: No information is available on the significant effects of ingestion of 0.1 mol/L hydrochloric acid. However, effects should be less severe that from exposure to higher concentration by ingestion where exposure may cause burns of the mouth, throat, esophagus, and stomach with possible symptoms of abdominal pain, nausea, vomiting, diarrhea, shock and intense thirst.

Listed as a Carcinogen/ Potential Carcinogen:

Yes	No	
	X	In the National Toxicology Program (NTP) Report on Carcinogens.
	X	In the International Agency for Research on Cancer (IARC) Monographs.
	X	By the Occupational Safety and Health Administration (OSHA).

4. First Aid Measures

Skin Contact: Rinse affected area with copious amounts of water for at least 15 minutes. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance immediately.

Inhalation: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing by qualified personnel. Get immediate medical attention.

Ingestion: If a large amount is swallowed, contact local poison control center or obtain immediate medical assistance. Allow vomiting to occur. To prevent aspiration, keep head lower than hips.

5. Fire Fighting Measures

Fire and Explosion Hazards: 0.1 mol/L Hydrochloric acid is a negligible fire hazard. Reacts with most metals to form explosive hydrogen gas.

Extinguishing Media: Use extinguishing agents appropriate for surrounding fire.

Fire Fighting: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products.

Flash Point (°C): Not applicable.
Method Used: Not applicable.

Autoignition Temp. (°C): Not applicable.

Flammability Limits in Air
UPPER (Volume %): Not applicable.
LOWER (Volume %): Not applicable.

6. Accidental Release Measures

Occupational Release: Flush small spills with water and neutralize with alkaline material. Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal.

Disposal: Refer to Section 13, “Disposal Considerations”.

7. HANDLING AND STORAGE

Storage: Store and handle in accordance with all current regulations and standards.

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: **0.1 mol/L Hydrochloric Acid**
Exceeding the occupation limits (below) of hydrochloric acid should not occur when using product SRM 2389 as intended in its original container.

OSHA: 7 mg/m^3 (5 ppm) ceiling
ACGIH (TLV): 2 ppm ceiling
NIOSH: 7 mg/m^3 (5 ppm) recommended ceiling
WEL UK: 8 mg/m^3 (5 ppm) STEL (gas, mist)
WEL UK: 2 mg/m^3 (1 ppm) TWA (gas, mist)

Ventilation: Use a local exhaust ventilation system to ensure compliance with applicable exposure limits.

Eye Protection: Wear safety goggles. An eye wash station should be readily available near areas of use.

Personal Protection: Wear appropriate protective clothing and chemically resistant gloves to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component: **0.1 mol/L Hydrochloric Acid**

Appearance: Liquid. Colorless.

Water Solubility: Soluble.

Boiling Point: > 100 °C (water)

10. STABILITY AND REACTIVITY

Stability: __X__ Stable _____ Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid heat, flames, sparks and other sources of ignition.

Incompatible Materials: Bases. Amines. Alkali metals. Metal salts. Cyanides. Aluminum. Combustible materials.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Hydrogen gas. Acid halides.

Hazardous Polymerization: _____ Will Occur __X__ Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: __X__ Inhalation __X__ Skin _____ Ingestion

Medical Conditions Aggravated by Exposure: No data available.

Health Effects (Acute and Chronic): See Section 3: "Hazards Identification" for potential health effects.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOTand IATA: Not regulated by DOT and IATA. (The concentration of hydrochloric acid in this material does not meet minimum concentrations for regulation by DOT or IATA.)

15. REGULATORY INFORMATION

U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Hydrochloric Acid: 5000 lbs RQ (liquid).

SARA Title III Section 302 (40 CFR 355.30): Hydrochloric Acid: 5000 lbs TPQ (gas).

SARA Title III Section 304 (40 CFR 355.40): Hydrochloric Acid: 5000 lbs RQ (gas).

SARA Title III Section 313 (40 CFR 372.65): Hydrochloric Acid: except non-aerosol forms

OSHA Process Safety (29 CFR 1910.119): Hydrochloric Acid: 5000 lbs TQ (gas).

California Proposition 65: Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE: Yes.
CHRONIC: No.
FIRE: No.
REACTIVE: Yes.
SUDDEN RELEASE: No.

CANADIAN Regulations: WHMIS Classification: Not determined.

EUROPEAN Regulations: EC Classification: Not determined.

National Inventory Status: U.S. Inventory (TSCA): Hydrochloric Acid listed on inventory.
TSCA 12 (b) Export Notification: Not listed.

EC Classification:

HCl Concentration Limits: 0.2 % ≤ C < 0.5 %

C Corrosive.

EC Risk and Safety Phrases:

HCl Concentration Limits: 0.2 % ≤ C < 0.5 %

R34 Causes burns.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39 Wear suitable protective clothing, gloves, and eye/face protection.

16. OTHER INFORMATION

Sources: MDL Information Systems, Inc., MSDS *Hydrochloric Acid,* 16 June 2005.